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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,855	12/08/2003	Ki-Seon Park	08244.0009-01	9300
22852	7590	06/20/2005	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			SMOOT, STEPHEN W	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/728,855

Applicant(s)

PARK ET AL.

Examiner

Stephen W. Smoot

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 6 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 7-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/739,740.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date: _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6-25-04</u>   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

This Office action is in response to application papers filed on 08 December 2003, which includes a preliminary amendment that has been entered.

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method for Manufacturing a Semiconductor Device for Use in a Memory Cell that Includes Forming a Composite Layer of Tantalum Oxide and Titanium Oxide Over a Bottom Capacitor Electrode.

2. The disclosure is objected to because of the following informalities:

Update the first sentence of the specification (see preliminary amendment, page 2) to indicate that 09/739,740 has issued as US 6,690,052; and

On page 7, line 6, change "Fig. 1B" to --Fig. 2B-- because Fig. 2B is being described (see page 7, lines 2-6).

Appropriate correction is required.

### ***Claim Objections***

3. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel claim 17, or amend claim 17 to place it in proper dependent form. The limitation of claim 17 is identical to claim 5, step (d).

4. Claim 23 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 22. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

5. Claims 7-23 are objected to because of the following informalities:

In claim 7, line 3, change "alternatively" to --alternately-- to correct spelling;

Claims 8-20 are objected to because they depend on claim 7;

In claim 16, line 2, change "first and second" to --third and fourth-- because third and fourth source gases are introduced into the reaction chamber in step (2);

In claim 16, line 3, insert --which-- before "remain" to correct grammar;

In claim 21, line 9, change "function" to --fraction-- to correct spelling;

In claim 21, line 12, change "present" to --preset-- to correct spelling;

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Claims 22-23 are objected to because they depend on claim 21;

In claim 22, line 3, change "alternatively" to --alternately-- to correct spelling;

In claim 22, line 5, change "alternatively" to --alternately-- to correct spelling;

In claim 23, line 3, change "alternatively" to --alternately-- to correct spelling;

In claim 23, line 2, change "third and fourth" to --first and second-- because first and second source gases are introduced into the reaction chamber to form tantalum oxide (see page 7, lines 18-19); and

In claim 23, line 5, change "alternatively" to --alternately-- to correct spelling.

Appropriate correction is required.

***Allowable Subject Matter***

6. Claims 5-6 are allowed.

7. Claims 7-23 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

8. The following is a statement of reasons for the indication of allowable subject matter:

- Claims 5-6 are allowed and claims 7-20 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a method for manufacturing a semiconductor device for use in a

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memory cell that includes the step of forming a composite layer of tantalum oxide and titanium oxide over bottom electrodes and the step of forming a dielectric layer over the composite layer, combined with the step of patterning both layers; and

- Claims 21-23 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a method for manufacturing a semiconductor device for use in a memory cell that includes the step of forming a composite layer of tantalum oxide and titanium oxide adjacent to a first electrode and the step of forming a dielectric layer adjacent to the composite layer, combined with the step of patterning both layers.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Saito et al., Sun et al., Kuo, Merchant et al., Nam, Lee et al., and Shin teach methods of forming capacitors that include forming composite layer of tantalum oxide and titanium oxide.

10. This application is in condition for allowance except for the following formal matters:

See above paragraphs 1-5.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWS

*Stephen W. Smoot*  
Patent Examiner  
Art Unit 2813